1. NAME OF PROPERTY

Historic Name: McKeen Motor Car #70

Other Name/Site Number: Virginia & Truckee Railway Motor Car #22

2. LOCATION

Street & Number: 2180 South Carson Street (Nevada State Rail Museum) Not for publication: ___

City/Town**:** Carson City Vicinity: ___

State: Nevada County: Carson City Code: 510 Zip Code: 89703

3. CLASSIFICATION

Ownership of Property		Category of Property	
Private:	___	Building(s):	___
Public-Local:	___	District:	___
Public-State:	_X_	Site:	___
Public-Federal:	___	Structure:	_X_
		Object:	___

Number of Resources within Property

Contributing	Noncontributing	
___	___	buildings
___	___	sites
1	___	structures
___	___	objects
___	___	Total

Number of Contributing Resources Previously Listed in the National Register: 1

Name of Related Multiple Property Listing: N/A

4. STATE/FEDERAL AGENCY CERTIFICATION

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this ____ nomination ____ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property ____ meets ____ does not meet the National Register Criteria.

Signature of Certifying Official Date

State or Federal Agency and Bureau

In my opinion, the property ____ meets ____ does not meet the National Register criteria.

Signature of Commenting or Other Official Date

State or Federal Agency and Bureau

5. NATIONAL PARK SERVICE CERTIFICATION

I hereby certify that this property is:

___ Entered in the National Register
___ Determined eligible for the National Register
___ Determined not eligible for the National Register
___ Removed from the National Register
___ Other (explain): _____

Signature of Keeper Date of Action

6. FUNCTION OR USE

Historic: Transportation Sub: Rail-related

Current: Transportation Sub: Rail-related (restored)

7. DESCRIPTION

ARCHITECTURAL CLASSIFICATION: N/A

MATERIALS:
Foundation: Wood (interior floor)
Walls: Wood (interior paneling)
Roof: Wood (interior ceiling
Other: Metal/Iron
Metal/Steel

Describe Present and Historic Physical Appearance.

Introduction

Owned, restored, and operated by the Nevada State Rail Museum (NSRM), McKeen Motor Car #70 (aka Virginia & Truckee Railway Motor Car # 22, and hereinafter referred to as the McKeen car) is an extremely rare, early example of a self-propelled railway motorcar powered by an internal-combustion engine. It was built by the McKeen Motor Car Company of Omaha, Nebraska, for the Virginia & Truckee Railway Company (V & T). It was ordered in October 1909 at a cost of $22,000 and out shopped in May 1910. It entered regular service on the V&T line between Carson City and Minden, Nevada on June 2, 1910. This car was operated by the V&T until sold in 1945—a remarkable record spanning 35 years and well over 500,000 miles of service. It is currently located at the Nevada State Railroad Museum in Carson City. The importance of the McKeen car is reflected in the following assessment by railroad history expert Stephen Drew:

> One of approximately 200 motor cars and trailers produced from 1905 until the McKeen Motor Car Company dissolved in 1920, the Virginia & Truckee McKeen is the best survivor of this revolutionary streamlined Nebraska motor car builder… As both a rare surviving product of the highly regarded McKeen Company and a half-million-mile veteran of Nevada's famous Virginia & Truckee Railway [it] is a national treasure.[1]

The McKeen car is being nominated under National Historic Landmark Criterion 1 for its pioneering role in the nationally important railroad industry within the context established by Theme 5, "Developing the American Economy" under the area of significance identified as "Transportation." The McKeen Car was listed in the National Register of Historic Places in 2005 at the national level of significance.

Description: As Built

The McKeen car is an example of the McKeen Motor Car Company's largest self-propelled railcar design. The car retains its original dimensions--72 feet 9 ¾ inches long, maximum width of 10 feet 2 ¾ inches, 11 feet 9 3/16 inches high, and a gross weight of 68,000 pounds. It was designed to carry a maximum of eighty-four passengers, and was operated by two crewmen, a motorman and a conductor/baggage man.

The trucks, underframe and car-body are all constructed of steel. Both the front and rear trucks have four wheels that were designed to operate on a standard gauge rail line (4 feet 8 ½ inches). The front truck has a wheelbase of 9 feet 5 inches and houses a pair of 42-inch diameter driving wheels along with a non-driving pair of 33-inch diameter wheels. The rear truck has four 33-inch diameter non-driving wheels and an overall length of 7 feet. Total wheelbase for the McKeen Car is 52 feet 7 inches. The underframe features an 8-inch 15-pound I-beam center sill and two 6-inch, 6-pound channel section side sills. The car body is of braced, riveted structural steel. The car body roof and walls are of unitary construction, much like a modern airplane, and the roof is curved for additional structural strength.

The overall shape of the McKeen car is an early exercise in aerodynamic design. The front of the car is tapered to a knife-like vertical point much like the prow of a ship. The roof and sidewalls are curved to avoid sharp

[1] Stephen E. Drew, *Virginia & Truckee Railway McKeen Motor Car #22 Restoration Feasibility Study, (*Carson City: Nevada State Railroad Museum, 1997), 2.

angles and the riveted exterior steel sheeting is left relatively free of projections. Roof mounted air intakes and ventilators are low and unobtrusive to improve aerodynamic performance. The rear of the car is rounded in keeping with early twentieth-century ideas about air resistance.

As originally built, the forward end of the car housed the engine room containing the motorman's seat, operating controls and a six-cylinder water-cooled 200-horsepower gasoline engine manufactured by McKeen that was patterned after a marine engine designed by the Standard Motor Works of Newark, New Jersey. This engine gave the McKeen car an official maximum speed of 32.5 miles per hour. The engine was placed directly over the front truck behind the drive wheels, which were driven by a Morse silent chain transmission. The transmission had two forward gears with the clutches and shifter operated by two air cylinders attached to the underframe. A New York Air Brake Company straight air-brake system was supplemented by a hand-operated brake. A 120-gallon gasoline tank was also mounted on the underframe.

The right and left sides (as one faces forward) of the McKeen car were almost identical. The engine compartment, located in the front of the car had two rectangular windows on either side of the pointed nose. To the rear of these on the left side was the arched-top motorman's door with a small fixed porthole window and a large porthole window. To the rear on the right was a third rectangular window and large porthole. To the rear of the engine room was the baggage room which featured large sliding baggage doors on both sides of the car. These arched-top doors also had a large fixed porthole window. Rearward of the baggage room was the smoking compartment with a maximum seating capacity of 30 passengers. This compartment had five large porthole windows on the left, four large and one small porthole windows on the right. The small window provided light for the gentlemen's toilet. Behind the smoking compartment was the main passenger compartment with seating for fifty persons. Separating the smoking compartment and the passenger compartment was the entry vestibule, which featured depressed paired passenger doors. These doors were also arched-topped with a semi-circular window in each half of the paired doors. Access to the main compartment level from the entry doors was provided by two stairs. The left side of the main compartment featured ten large porthole windows and one small porthole window that provided light to the ladies' toilet. The right side had eleven large porthole windows. The rearmost windows follow the curve of the end of the car-body and there was an additional large porthole window facing directly to the rear of the car. All of the large porthole windows were 24 ¾ inches in diameter, operable, and constructed of brass-finished aluminum. The small porthole windows were 14 inches in diameter, wood-framed and fixed. The rectangular windows were 25 ½ inches square, also wood frame, and both operable and fixed.

The interior of the car was finished with a variety of materials. Floors were comprised of 3 ½ inch maple tongue-in-groove boards. The passenger compartments and baggage room featured two inch horizontal 28-inch high mahogany tongue-in-groove wainscoting; this same kind of material was mounted vertically in the rounded rear end of the passenger compartment. The wall panels in the main compartment and smoking compartment were finished in mahogany veneer. The ceiling was ¼-inch thick, painted and stripped plywood. Seating consists of one semi-circular 10-seat couch at the rear of the main compartment, twenty-two, fixed-frame three-seat units, and four, fixed-frame two-seat units. All seating was upholstered in dark green imitation leather over innerspring cushions. All interior lighting, as well as the factory provided headlamp located at the nose of the car, was fueled by acetylene gas. Heat for all compartments was provided by hot water pipes fed by jacket water from the engine. A water cooler was located next to the passenger compartment lavatory.

Significant Changes Prior to Restoration Effort: 1910-1996

As with any piece of transportation equipment, the McKeen car underwent a variety of alterations during its years of service (1910 to 1945). Minor changes such as elimination of the acetylene lighting system in favor of electricity, the addition of an air horn, a larger headlamp, and other minor changes were undertaken in the 1910s and 1920s. The most significant changes to the car were made in 1932. As the automobile became more popular in the 1920s, passenger revenues from the McKeen car began to decline. As such the V&T began to operate smaller motorcars on its line, reserving the McKeen for specials and extras when a heavy traffic demand was anticipated. Following the stock market crash in October 1929, V&T decided to remove its McKeen car from passenger service, and it was laid up at the V&T shops in Carson City. In 1930, the V&T began a campaign to utilize the McKeen as a Railway Post Office and Railway Express Agency freight and baggage car. It took until early 1932 to convince the U.S. Post Office Department to accept conversion of the McKeen for this purpose. Conversion work was conducted during the summer of that year at the Carson City shops. The main passenger compartment was divided with a new bulkhead and the rear of the car converted for freight and baggage handling. This included removal of the seats and the addition of two sliding freight doors, one on either side of the car. New freight doors were also added to the smoking compartment which was stripped of its seating and converted into a Railway Post Office. The McKeen's passenger capacity was now limited to twenty-four passengers in the forward portion of the old main passenger compartment. Service in this new configuration was inaugurated in October of 1932 on a three day/week schedule between Reno, Carson City and Minden.

The McKeen car operated in this fashion until its last run on October 31, 1945. By the end of the Second World War, the V&T had been in receivership for many years. Revenue has been steadily declining since the 1920s due to improved highways resulting in increased competition from trucks and autos. These conditions only worsened with the economic hardships of the Great Depression. Management decided to consolidate service on the V&T and eliminated motorcar service in favor of a single, daily mixed train operated with steam locomotives.

The V&T management attempted to find another railroad operator to buy its McKeen car but had no luck. In August 1946, the car was sold to Carson City restaurant operators Alva H. Dennison and Dudley Klein for the sum of $1000. The V&T retained the trucks and engine from the McKeen and the de-trucked and de-engined car was moved to 1111 North Carson Street (US Route 395) in Carson City. All railway furnishings were removed and the car body opened as Denny's Diner in late 1946. It was moved to a new location at 1604 North Carson Street in 1948 and again to 1400 South Carson Street in 1955. At that time additional door openings were cut into the side of the car body and several existing doors were widened. By the early 1960s, the McKeen car had ceased to be used as a restaurant and was used first for storage and later as offices for a local plumbing and heating firm. In 1995, the owners of Al's Plumbing and Heating, the Bernhard family, donated the McKeen car to the Nevada State Railroad Museum, and the McKeen car was moved to its present location for restoration.

Restoration: 1995-present

Following acquisition of the McKeen in 1995 the Nevada State Railroad Museum (NSRM) undertook an exhaustive examination of the then-present condition of the car and its potential for restoration. It found that while the trucks, engine and a portion of the braking system had been scrapped in 1946; the car body and underframe were reasonably intact, albeit in a deteriorated condition. New freight and baggage doors had been

added in 1932. An additional door had been cut into the car-body circa 1948 and several existing doors had been extended in 1955. The structural system of the car was intact but not in good condition; more than half of the original windows remained. On the interior, the three original compartment bulkheads were intact, although the doors were missing and the door openings had been expanded. The 1932 partition installed to create the rear Railway Express Agency section had been removed. Original flooring and wall finishes, while deteriorated in places, remained intact throughout the car. All seating and other furnishings had been removed, as had the complete contents of the engine room.

Fortunately, surviving original construction details and drawings and historic photographs provided an excellent informational basis for NSRM to determine the future of the McKeen car. From 1995 to 1997, NSRM conducted an in-depth restoration feasibility study and created a detailed restoration master plan. The organization chose to return the car, as closely as practicable, to its original appearance and to make the car operable and accessible to the public. This restoration approach meant that the NSRM would retain all salvageable historic material from the car and replace or replicate missing items. The replication of a few aspects of the McKeen car's original construction was deemed to be impracticable. A new 200-horsepower Caterpillar Company diesel engine[2] was donated for use in the McKeen, as an actual McKeen-produced engine was not available. Instead of the original Morse chain drive transmission a dual chain drive transmission system was installed. All of the operating controls and all mechanical systems were replaced with controls meeting current operational safety standards. For example, it was not feasible to restore the original acetylene gas lighting system. Instead, an electrical lighting system with replicated fixtures designed to emit light of a frequency similar to acetylene was used. The missing trucks were replicated while at the same time, built to ensure conformance with current rail-safety specifications. All original interior and exterior finishes were restored or replicated.

When the McKeen car was listed on the National Register of Historic Places in 2005, restoration work on the car was substantially complete. The car body, windows and underframe had been rehabilitated. The non-original door openings have been returned to their original appearance. The trucks had been fabricated and attached. The engine and control systems had been designed. The interior restoration, including replicated seating and light fixtures, had been completed. On October 15, 2009, the McKeen, with the new engine and transmission finally in place, operated under its own power for the first time since 1945. Final interior and exterior detailing premiered at public dedication ceremonies on May 9, 2010. As restored, the McKeen car retains an overall high level of historic integrity that readily conveys its historic character and significance to the visiting public.

[2] The National Register of Historic Places documentation states a Cummings engine was going to be used. A Caterpillar Company diesel engine was donated and used instead. Chris Dewitt, e-mail message to author, August 1, 2011.

8. STATEMENT OF SIGNIFICANCE

Certifying official has considered the significance of this property in relation to other properties:
Nationally: X Statewide: _ Locally:

Applicable National Register Criteria:	A_X_ B_ C_ D
Criteria Considerations (Exceptions):	A_ B_ C_ D_ E_ F_ G
NHL Criteria:	1
NHL Theme(s):	V. Developing the American Economy 3. transportation and communication
Areas of Significance:	Transportation (rail)
Period(s) of Significance:	1910-1946
Significant Dates:	1910, 1932, 1945, 1946
Significant Person(s):	N/A
Cultural Affiliation:	N/A
Architect/Builder:	McKeen Motor Car Company, Omaha, Nebraska
Historic Contexts:	XIV. Transportation E. Railroads XVIII. Technology (Engineering and Invention) B. Transportation

State Significance of Property, and Justify Criteria, Criteria Considerations, and Areas and Periods of Significance Noted Above.

Summary

The McKeen car is being nominated National Historic Landmark designation under Criterion 1 for its pioneering role in the nationally important railroad industry within the context established by Theme 5 "Developing the American Economy" under the area of significance identified as "Transportation." Specifically, the V&T McKeen car is the best surviving example of a railcar powered by an internal-combustion engine designed by the early twentieth century railroad engineer and innovator William Riley McKeen Jr. (1869-1946).

The McKeen Motor Car Company (1905-1920) produced the first commercially viable application of internal-combustion power to American rail transportation. The McKeen car is a vital precursor of the transition from steam power, dominant in the nineteenth century, to petroleum-based locomotion that emerged as the preferred means of propulsion for rail transportation in the twentieth century. In addition, the McKeen car presaged the rise of the streamlined all-steel passenger train of the 1930s. McKeen's use of clean exterior lines, nautically inspired porthole windows, an aerodynamic wedge-shaped nose and rounded tail, and a self-supporting tensed steel car-body were all innovations which would become the industry standard in the mid-twentieth century—many years after the McKeen Motor Company had ceased production. As noted railroad historian John H. White, Jr. wrote, "The resulting McKeen car represented the real beginning of the main-line gasoline rail car. It was the first to be built in any significant number, and it marked the origin of a serious interest in such rolling stock by an American Railroad. It was also one of the most distinctive and imaginative rail vehicles ever produced." [3] As restored, the Nevada State Railroad Museum's McKeen car is an extremely rare example of a self-propelled railcar powered by an internal-combustion engine that retains a high level of overall historic integrity.

E. H. Harriman, W.R. McKeen Jr. and the McKeen Motor Car Company

The McKeen car resulted from the convergence of two extraordinary figures in American railroad history: Edward Henry Harriman and William Riley McKeen, Jr. Of the two, Harriman is better known. He was born in 1848 into a family that had been in the mercantile business in and around New York City for three generations.[4] Like many in his family, Harriman, had a talent for figures and the hardboiled business dealings typical of America in the mid-nineteenth century. His financial career began at the tender age of fourteen as a messenger and order-taker in the wide open Wall Street during the Civil War years.[5] Harriman quickly rose to prominence becoming a member of the New York Stock Exchange in 1870.[6] Over the next several decades Harriman came to amass a substantial fortune and to place himself, both through shrewd business acumen and family ties to most of the New York business elite, at the very center of American industry and finance. He developed an affinity for taking troubled companies and returning them to robust financial health through innovation, investment and scrupulous cost control. This was particularly true of railroad companies.[7]

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[3] James H. White, Jr., *The American Railroad Passenger Car,* (Baltimore: Johns Hopkins University Press, 1978), 894.
[4] Maury Klein, *The Life and Legend of E.H. Harriman*, (Chapel Hill: University of North Carolina Press, 2000) 28-29.
[5] Ibid., 32-33.
[6] Ibid., 33.
[7] Ibid., 45-47.

In 1898, Harriman undertook his greatest corporate rejuvenation in the form of the financially prostrate Union Pacific Railroad. One of the original companies to build the first transcontinental railroad in the 1860s, by the 1890s Union Pacific (UP) was in dire financial straits and was considered by many on Wall Street and in the railroad industry to be a lost cause. Scandal-ridden and under-capitalized almost from its inception the UP had lapsed into bankruptcy during the Panic of 1893 and still had not emerged five years later. The railroad was in deplorable physical condition with outmoded equipment and competitors on all sides waiting for what seemed to be the inevitable fire sale.[8] Harriman took on the UP and subjected every aspect of its operation and financial structure to close and unbiased scrutiny. He undertook a massive capital improvement campaign and began to question every expense and means of conducting business in a meticulous search of maximum cost efficiency.[9] By 1901, Harriman was in a position to add the Southern Pacific Railroad to his holdings creating a rail empire second to none in the United States.[10]

In obtaining the UP, Harriman also acquired the services of an extraordinary engineer. William Riley McKeen Jr., born in 1869, had literally grown up in the railroad business. His father had been a well-known Indiana banker and president of the Terra Haute & Indianapolis Railroad. McKeen graduated from the Rose Polytechnic Institute in Terra Haute, Indiana in 1889. He then went on to graduate work in mechanical and electrical engineering at Johns Hopkins University in Baltimore, and at the Charlottenburg Polytechnikum in Berlin. McKeen began his railroad career in 1891 in Columbus, Ohio and soon after was appointed master car builder and general foreman of the Terre Haute & Indianapolis Railroad's car and locomotive shops. Subsequently, he returned to Rose Polytech and earned a master's of science degree in 1896 and a masters in engineering in 1898. That same year, he moved to North Platte, Nebraska to work as district foreman for the Union Pacific. By 1901, McKeen was working as master mechanic for the UP operations at Cheyenne, Wyoming, and in June 1902, he became superintendent of motive power and machinery at Union Pacific's massive main shop complex in Omaha, Nebraska.[11]

It is unclear where the initial inspiration for the McKeen car came from. Some sources attribute it to developments in marine architecture and engineering.[1213] Other sources say that Harriman drew inspiration following an automobile tour during a 1903 trip to Europe.[14] It is clear that experiments with self-propelled rail cars had been undertaken prior to the development of the McKeen car.[15] It is also clear that E.H. Harriman made a financial success of his business ventures by examining every aspect of corporate operations and mercilessly hunting for efficiency and ways to cut costs. One of the costs that Harriman wished to cut at Union Pacific was the expense of branch line passenger operations. In order to generate freight revenue, particularly agricultural products, many midwestern and far-western railroads had constructed webs of branch lines to serve lightly populated rural areas. Union Pacific had many such lines, especially in Nebraska. Passenger operations on many of these lines were not profitable and a drain on corporate revenue. Harriman determined that finding a low-cost substitute for steam passenger trains was an important part of his efforts to maintain a resuscitated Union Pacific.[16]

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[8] Ibid., 105-107.
[9] Ibid., 123-129.
[10] Ibid., 217-221
[11] Drew, *Virginia & Truckee Railway McKeen Motor Car #22 Restoration Feasibility Study, 3.*
[12] Ibid., 3.
[13] White, *The American Railroad Passenger Car*, 594.
[14] Klein, *The Life and Legend of E.H. Harriman,* 263.
[15] White, *The American Railroad Passenger Car, 579.*
[16] Ibid., 593-594.

In 1903, Harriman turned this idea over to his chief mechanical officer McKeen. McKeen immediately set to work to design an efficient self-propelled rail car that would meet the needs of branch line passengers and operating cost reduction. He fixed his attention on the internal-combustion engine as the most efficient and reliable then-available means of propulsion. A two-person crew would be adequate to operate the new vehicle, which was half the labor cost of a traditional steam train. His prototype car, a 31-foot long wooden version of the later steel car, was completed in early 1905 and dubbed Union Pacific M-1. The M-1 was gasoline-powered and exhibited the same "aerodynamic" design that came to typify McKeen cars.

The M-1 was immediately dispatched on a publicity tour of the Union Pacific system traveling from Omaha to Portland, Oregon, and back. Following this journey the M-1 was placed in revenue service on a UP branch line between Kearny and Calloway, Nebraska. The tour generated significant interest in the odd looking car—sufficient to encourage additional work at UP's Omaha shops. The M-2, which was McKeen's first 55-foot long car and featuring all steel construction, emerged in 1905. The M-7 of 1906 was the first McKeen car to have the signature porthole windows and depressed center entry doors. Response to these efforts was positive enough that Union Pacific established a subsidiary company, with McKeen as president, to produce gasoline railway motor cars. The McKeen Motor Car Company occupied a series of buildings at the north end of the massive Union Pacific shop complex in Omaha.[17]

Between 1908 and 1920, the McKeen Motor Car Company produced approximately 160 railway motor cars that were used across the United States and in Mexico and Australia.[18] The distinctive vehicle designed by William R. McKeen incorporated several innovations to railroad engineering and design, innovations which presaged more widespread changes that would revolutionize rail transportation in the twentieth century and also contribute to the ultimate decline of most rail passenger operations.

Internal-combustion Propulsion

Perhaps the most important innovation associated with the McKeen car was the application of a new (for railroads) power source—the internal-combustion engine. Almost from the beginning railroad companies sought less expensive ways to provide transportation service. The concept of a self-propelled rail car, as opposed to a car pulled by a separate locomotive, had been experimented with as early as the late 1850s. Throughout the nineteenth century a variety of power sources were applied to rail equipment in a search for a less costly alternative to the traditional steam train. Perhaps the best success on these lines came from street railways or trolleys that, using electric power, rapidly became the primary mode of urban public transportation. Indeed by 1900, inter-urban electric cars had made steady inroads into traditional steam railroad territory and profits.[19] Electrification, however, required substantial investment in new infrastructure in addition to new rolling stock. As such it was not cost effective in lightly populated markets. Similarly, self-propelled steam cars never provided sufficient results to encourage mass production.[20] It was the development of the internal-combustion engine powered by petroleum distillates such as diesel and gasoline that provided the most hope for true innovation and cost savings. As early as the 1880s, primitive gasoline engines had been experimented with and affixed to a variety of carriages, horse-cars and rail equipment. Early experiments were conducted by a number of companies, none of which resulted in anything more than unique experiments. The only car even tested by a railroad company was the *Eureka*—a gasoline car built by the colorfully named Vimotum

[17] Ibid., 595.
[18] Drew, *Virginia & Truckee Railway McKeen Motor Car #22 Restoration Feasibility Study*, 8-9.
[19] White, *American Railroad Passenger Car*, 579.
[20] Ibid., 579-581.

Hydrocarbon Car Company of Chicago. Despite tests by both the New York Centraland Pennsylvania Railroads in 1899, the *Eureka* did not perform well enough to interest either company and Vimotum quickly disappeared.[21]

By the time William McKeen began planning his car in 1903 and 1904; however, developments in engine design and increasing power production associated with gasoline motors induced him to select a 200-horsepower gasoline engine for his power plant. His first car was equipped with a motor purchased from Standard Motor Works of Newark, New Jersey. Every one of his subsequent cars had McKeen-manufactured gasoline motors, modeled after the Standard Motor example. While large engines of this sort had been installed in watercraft, use in the McKeen car was the first practical application of this new technology in rail transport.[22] Other companies quickly followed the McKeen lead. General Electric began working on gasoline-electric motor cars and began production for sale in 1909.[23] Additional companies which produced motor cars prior to World War I included: the Kuhlman Car Company of Cleveland, the Strang Gas Electric Car Company of New York and the Hall-Scott Company of Berkeley, California.[24] All in all more than 250 gasoline motor cars had been put in operation between 1905 and 1917—approximately 160 built by McKeen.[25]

Streamlining

The slow speed of early trains did not make air resistance a worthy consideration in railroad design. As train speeds increased in the mid-nineteenth century, however, air resistance was identified as a clear obstacle to operation at high speeds. S.R. Calthrop patented an early design for a streamlined train on August 8, 1865. This train bears a striking similarity to the McKeen car as it has a pointed nose, an arched roof, and is covered with an uninterrupted outer skin to reduce drag. Needless to say Calthrop's train was never produced but it did embody both the detail and the concept of reducing air resistance, as it was understood in the nineteenth century. This early design may have given inspiration to another and more tangible attempt at streamlined design—the Adams *Windsplitter*. Fredrick U. Adams was an engineer associated with the Baltimore & Ohio Railroad. Beginning in the late 1880s, Adams began to research the concept of wind resistance and design as applied to rail transportation. He published a book in 1892 on the subject titled *Atmospheric Resistance in its Relation to the Speed of Trains* in which he proposed a design for an aerodynamic train that incorporated many features of the Calthrop design. In 1899, he constructed an experimental set of cars that became known as the Adams *Windsplitter*. The Baltimore & Ohio conducted tests in 1900 using this train set. The results, however, could not justify the construction of new cars for B&O passenger operations and the experimental cars were quickly dismantled.[26]

In the fall of 1903, a series of high speed rail tests were conducted on a specially constructed line running between Berlin and Zossen in the German state of Prussia. The "Studierengesellschaft," a cooperative venture between German industry and the Imperial government, conducted these tests. Many aspects of high- speed electric rail transport were examined and tested including rudimentary experiments involving air resistance and

[21] Ibid., 593.
[22] Ibid.
[23] Ibid., 597-598.
[24] Ibid., 600.
[25] Drew, *Virginia & Truckee Railway McKeen Motor Car #22 Restoration Feasibility Study*, 9.
[26] August Menchen, *The Railroad Passenger Car* (Baltimore: Johns Hopkins University, 1957), 83-86.

wind. Experimental railcars were fitted with both rounded and pointed ends in an attempt to increase efficiency.[27]

Primitive experiments were conducted measuring the amount of air resistance generated from 50 to 200 kmph in each design and compared to results from a traditional blunt ended car. The report[28] concluded that "The pointed noses diminish the air resistance very considerably--for instance, at a speed of 200 kmph (124 mph) it is reduced about 8%. If from the start, in constructing the car, the most favorable form for overcoming the air resistance is used, the air resistance can be still further diminished."

There is a striking similarity between the modified car design used in these tests and the design that McKeen used for his rail cars. The German tests were published in the United States in 1905 the same year that McKeen designed his first railcar for Union Pacific, known as the M-1. McKeen credited the 1903 Berlin-Zossen tests and an experimental electric car demonstrated at the 1904 St. Louis World's Fair as the genesis of his pointed front and rounded rear.[2930] Given that efficiency was a mania with his backer E.H. Harriman and that the entire purpose of self-propelled rail cars was cost savings, it is not surprising that even a modest 8% reduction in wind resistance would be more than sufficient reason for McKeen to adopt this earliest mass-produced example of what came later to be known as streamlined design.

It is also important to note that McKeen was a consummate showman and promoter. It is just as likely the desire to make a bold and attention-grabbing visual impact with his new car played an important role in his decision to utilize these sources for his motor-car design.[31] Other commentators have noted the nautical character of the McKeen—described as an "upside down boat" or a "submarine on rails".[32] As with the gas engine, McKeen took experimental elements and applied them for the first time to a production rail vehicle. The result was visually imposing and unusual, if not particularly sound, from a modern aerodynamic perspective.

Steel Construction of Railroad Cars

McKeen was not the first railroad engineer to employ steel construction. Indeed, fire had been a major problem with wooden cars for many decades and the use of iron, steel, and other fireproof materials had been examined and experimented with often during the latter half of the nineteenth century.[33] Railroads resisted the introduction of steel cars as being too costly to construct and, as they were heavier than wooden cars, less cost-efficient to operate. Steel cars were first produced for electrified subway trains. In 1902, the Interborough Rapid Transit Company selected all steel cars for New York's first subway line. Following a horrific fire in the Paris subway, the added safety of a steel car was a key factor in enticing a skeptical New York public to ride on the new subway.[34]

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[27] Berlin-Zossen Railroad, *The Berlin-Zossen Electric Railway Tests of 1903: A report on the test runs made on the Berlin-Zossen Railroad in the months of September to November 1903*, trans. Franz Welz (New York: E. E. McGraw Publishing Company, 1905), 15-16.

[28] Ibid., 32

[29] White, *American Railroad Passenger Car*, 595.

[30] Raymond S. Zeitler, *Self-Contained Railway Motor Cars and Locomotive*, (Chicago: American School, 1978), 30.

[31] Drew, *Virginia & Truckee Railway McKeen Motor Car #22 Restoration Feasibility Study*, 6.

[32] White, *American Railroad Passenger Car*, 595.

[33] Ibid., 117-130.

[34] Ibid., 131.

McKeen had similar concerns about safety and marketability for his motor car. As with underground railways, gasoline engines were new to the traveling public in 1905. Moreover, early gasoline engines were prone to fire. The loss on the wooden M-1 to fire only reinforced the need for steel construction if the McKeen car was to achieve wide acceptance.[35] McKeen also wrestled with the need for keeping the car-body as light as possible. While steel was durable and fire resistant, it was also heavy. McKeen devised a unique construction design based on arched steel trusses. This combined with stressed steel skin and the round windows allowed the shell of the car-body to serve as a combination plate and trussed girder. The result was a highly innovative lightweight car-body with exceptional strength. This design would not be used again in rail transportation until lightweight streamlined passenger units were developed in the early 1930s.[36]

The Rise and Demise of the McKeen Motor Car Company and Later Developments in American Railroading

The McKeen Motor Car Company met with initial success. The company's motor cars were innovative and striking, receiving much attention in the press. As Harriman and the Union Pacific owned a large interest in the McKeen Company, it is logical that a large number of McKeen cars were purchased by Union Pacific, Southern Pacific and other Harriman-affiliated roads. Indeed, thirty-two of thirty-eight cars produced by McKeen between 1905 and 1909 went to Harriman companies. However, other railroads also took an interest, including the Virginia & Truckee Railway which purchased its McKeen in 1910. By 1912, 125 McKeen cars were in service and ultimately fifty different railroads would operate McKeen equipment.[37]

Success, however, was short-lived. Beginning in 1913 sales of McKeen cars began to fall off. With U.S. involvement in World War I in 1917, materials for new rail cars disappeared and operations at the McKeen shops were halted. Some have claimed that difficulties with McKeen's mechanical transmission, which was balky and primitive, were responsible for declining sales.[38] It is more likely, however, that the gasoline motor car fell victim to other changes in the American economy. This is born out by the fact that General Electric and other manufacturers that did not rely on a mechanical transmission also experienced a steep decline in sales in the years immediately prior to World War I. Certainly the meteoric rise and popularity of the automobile is a factor in this decline. In 1905, the automobile was an unreliable toy for the very wealthy. By 1917, it had become a fixture on the American scene. Given the improvement in automobiles (and trucks) and highways during this period, it is not surprising that the demand for rail cars, always used and marketed for short haul operations, should decline. Moreover, it is likely that there were only a limited number of rail operations that were suitable for gasoline motor cars. By the mid-1910s, the market was apparently saturated.[39]

Whatever the reason for decline of the McKeen Motor Car Company, few cars were ordered after 1917. After the end of World War I, the United States entered a recession with rural areas hit particularly hard. In 1920, the McKeen Motor Car Company was liquidated and William McKeen retired to an avocado ranch in Montecito, California where he lived until his death in 1946.[40] Despite the closure of the McKeen operation, the gasoline motor car did continue on. In the 1920s, railroads faced increased competition from autos and trucks in addition to increasing costs. A second generation of self-propelled rail cars emerged during this period, which relied on

[35] Ibid., 595.
[36] Drew, *Virginia & Truckee Railway McKeen Motor Car #22 Restoration Feasibility Study*, 6.
[37] Ibid., 10.
[38] Ibid., 8-9.
[39] White, *The American Railroad Passenger Car*, 596-602.
[40] Drew, *Virginia & Truckee Railway McKeen Motor Car #22 Restoration Feasibility Study*, 9.

electric rather than mechanical transmissions. The true vindication of McKeen's radical ideas did not fully emerge on the American scene until the advent of the Streamliners.[41]

By the early 1930s, America was in the depths of the Great Depression. The economic downturn that began with the 1929 stock market crash sent the already shaky railroads reeling. Revenues and passenger ridership plummeted. Many branch line operations were terminated. However, new technology made the innovations first introduced by McKeen in 1905 worth another look, not for low capacity branch line service, but rather for new high-speed intercity passenger trains. It is no coincidence that the first streamlined train to be introduced was built at the direction of W. Averill Harriman, son of E.H. Harriman, for the Union Pacific Railroad. The M-10,000 was designed by W.B. Stout and ordered from the Pullman Company in 1933. It incorporated internal-combustion propulsion, aerodynamic design, and lightweight metal construction, all innovations utilized by McKeen thirty years before. When the three car articulated train, renamed *City of Salina*, debuted in early 1934, it caused a national sensation.[42] Over the next twenty years, virtually every major railroad in America converted to diesel-powered lightweight streamlined passenger equipment. By the 1950s, employment of internal-combustion engines fully dominated freight operations as well. By 1960, steam operated trains were a novelty.[43] In this sense, McKeen was thirty years ahead of his time, and his motor car concepts paved the way for the development of rail transportation in the twentieth century.

McKeen Car #70 and The Virginia & Truckee Railway

The Virginia & Truckee Railroad (renamed the Virginia & Truckee Railway following bankruptcy reorganization in 1904) is perhaps the most famous and mythologized short line railroad in the United States. Its most eloquent chronicler, the late Lucius Beebe[44] wrote: "The legend of this sparkling railroad to Golconda has so often been invoked by true believers in the faith of steam locomotion that there are those who imagine it to be a railroad of elfland, one with Babe the blue ox and the Big Rock Candy Mountain of the drifters and bindle stiffs." Since the beginning of mining on the Comstock Lode, in what is now Storey County, Nevada, logistics and transportation were of paramount concern. The mines were primarily located in Virginia City and Gold Hill, precariously perched on the treeless slopes of bone dry Mount Davidson at an elevation of more than 6,000 feet above sea level. The milling of raw ore into relatively pure gold or silver ingots requires a substantial and steady water source, which was not available on the Lode. As such, mills were established along the Carson River fifteen miles south of, and 1,200 feet lower than, the Comstock region. As the mines exhausted surface diggings and went underground, an enormous amount of timber was needed to shore up the workings. Again there was no timber available on the Comstock and wood had to be cut and hauled up the hill.[45]

Transportation in the 1860s in Nevada relied on horse, mule, and ox power; as such, it was expensive and capacity was limited. This meant that the costs of extracting ore from ever-deeper mines were quite high. So much so that by the mid-1860s the Comstock mines entered their first serious downturn or *borrasca*. At this time, the Bank of California began to consolidate its holdings on the Comstock. Under the direction of William Sharon and the Bank, the Union Milling and Mining Company achieved control of most of the mines and mills

[41] White, *The American Railroad Passenger Car*, 605-611.
[42] Ibid., 613.
[43] Ibid., 615.
[44] Lucius Beebe and Charles Clegg, *Steamcars to the Comstock*, (Berkeley: Howell-North Books, 1957), 9.
[45] Russell R. Elliot, *History of Nevada*, (Lincoln: University of Nebraska Press, 1973), 126-127.

on the lode.[46] Along with consolidation, "the Bank Crowd," as it was known, began to consider the need for less expensive and more reliable transportation. If the cost of hauling timber and supplies uphill and the cost of hauling ore downhill could be reduced, profits might rise dramatically. Sharon and his financial partners determined that the only viable solution to the transportation problem was a steam railway linking the mines in Virginia City/Gold Hill with the mills along the Carson River and to Carson City where logging flumes brought timber down out of the Sierra Nevada.[47] The first rail for the V & T Railroad was spiked down in September of 1869. By this time the scope of the enterprise had expanded to linking Virginia City with the newly completed transcontinental railroad at Reno. The line was completed from Carson City to Gold Hill on November 29, 1869 and to Virginia City on January 29, 1870. The line from Carson to Reno was completed in 1872.[48]

The reduction in transportation costs had the desired effect and the mines returned to high production and profitability. By 1873, the V&T was earning more than $100,000 in profits per month.[49] Virginia City and the Comstock mines continued to prosper during the 1870s. By 1880, however, mining on the Lode had begun to fall off. The ore quality became too low to mill profitably, particularly with the expense of maintaining a mining infrastructure that in some cases reached more than 3,000 feet below the surface.[50]

The V & T in the Early Twentieth Century:

Various attempts to revive the Comstock mines in the latter part of the nineteenth century came to naught and by 1900, the V&T found itself with only a fraction of its former income. The company was also dogged by bad luck. In 1900 the V&T sold the Carson & Colorado--its subsidiary narrow-gauge line. The C&C, also known as The "Slim Princess", was constructed in the 1880s to serve various short-lived mining communities in central Nevada. The C&C was never a paying proposition for the V&T and when asked about its prospects, V&T President D.O. Mills stated "either we have built the railroad 300 miles too long or 300 years too soon".[51] As such, the V&T gratefully sold the C&C to Southern Pacific. One month later, Jim Butler found a legendary deposit of gold at Tonopah in Central Nevada. This proved to be just the sort of strike the C&C was designed to exploit. The discovery set off the last great American mineral rush that in turn made the C&C a paying proposition for its new owners. The V&T did reap a bit of revenue from interchange traffic with the C&C. It was soon bypassed, however, by a new line built by the Southern Pacific to connect its main line with the C&C.[52]

Revenues continued to decline for the V&T, and in 1904, it was forced into bankruptcy reorganization. V&T directors realized that a new source of traffic was needed in order to return the line to profitability. In 1905, the decision was made to build a new branch line connecting Carson City with the growing and prosperous agricultural region to the south. A new town, Minden, was platted for the line's terminus and construction

[46] Ronald M. James, *The Roar and the Silence: A History of Virginia City and the Comstock Lode* (Reno: University of Nevada Press, 1998), 89-90.
[47] Ibid., 80-84.
[48] Kyle K. Wyatt, *Virginia & Truckee 4-6-0 Locomotive #27 Restoration Feasibility Study*, (Carson City: Nevada State Railroad Museum, 1997), 1:1.
[49] Beebe, *Steamcars of the Comstock*, 16.
[50] James, *Roar and Silence*.
[51] Beebe, *Steamcars of the Comstock*, 74.
[52] Ibid., 75-76.

began in earnest in the spring of 1906. The first train into Minden arrived on August 1, 1906, and the new line quickly became the dominant revenue producer for the V&T.[53]

This new line also required a reassessment of V&T equipment. In 1901, all of the V&T locomotives were at least twenty-five years old. They consisted mainly of 4-4-0 (American) and 2-6-0 (Mogul) engines with what, by the turn of the century, would be considered relatively low maximum speeds and hauling capacity. The new Minden line had relatively few sharp curves and much easier grades than the Virginia City line. For their new line, the V&T opted to purchase new and more efficient equipment. Beginning in 1905, the V&T began to purchase new locomotives and rolling stock.[54]

By 1909, the new Minden branch had produced substantial revenue for the V&T. For the fiscal year ending June 30th of that year, the Minden branch had accounted for 9,084 paying passenger tickets with operating revenue of $10,262.20.[55] Initially, the V&T operated a single daily steam-powered passenger train on the Minden line. V&T management concluded that supplemental passenger service on this line could be profitable if costs could be kept down. A self-propelled motor car seemed to be the answer. Motor cars of the time required less fuel cost per passenger mile than a standard steam train. In addition, a motor car only required a two-man crew thereby saving half the labor costs of a traditional steam train.[56]

McKeen Motor Car #70 (aka V & T McKeen Motor Car #22):

The first indication of interest in a McKeen car by the V&T is to be found in the private files of Henry M. Yerington, General Manager and Vice-President. It appears that Yerington began to examine the question of a motor car for the V&T in early 1909. His motor car file, now preserved at the Special Collections Department of the University of Nevada-Reno Library, contains a trade clipping dated June 24, 1909 showing a 55-foot McKeen car.[57]

By September of that year, V&T President D.O. Mills had received correspondence from William R. McKeen regarding the purchase of a McKeen car. Mills was already familiar with the motor car since another railroad owned by the Mills family, the Bellingham Bay & British Columbia Railroad, had purchased and operated a 70-foot McKeen car. Mills sent McKeen's letter, presumably with his endorsement, to Yerington in Carson City. On September 9, 1909, the *Carson Appeal* ran a front-page story indicating Yerington's interest in a McKeen car for the Minden branch of the V&T. Two days later, Yerington wrote to McKeen requesting a draft contract and price for a 70-foot McKeen car.[58] By October 6, 1909, final details had been agreed upon and the order for the V&T McKeen car was placed. Final price for a 70-foot, 84-passenger car complete with extra wide baggage doors was $22,000, f.o.b. Omaha, to be delivered by March 20, 1910.[59]

The new McKeen car was delivered on time, sporting her V&T livery of dark red with "VIRGINIA AND TRUCKEE RAILWAY" and the numeral 22 (her V&T operational designation number) in gold. In early April

[53] Grace Dangberg, *Carson Valley: Historical Sketches of Nevada's First Settlement*, (Minden: Carson Valley Historical Society, 1972), 120.
[54] Mallory Hope Ferell, *Virginia & Truckee: The Bonanza Road*, (Mukilteo: Hundeman Publishing, 1999), 149.
[55] Drew, *Virginia & Truckee Railway McKeen Motor Car #22 Restoration Feasibility Study*, 17.
[56] Ibid., 17-18.
[57] Ibid., 18.
[58] Ibid., 18-19.
[59] Ibid., 21-24.

1910, the V&T dispatched machinist Ed Peterson to Omaha to receive training in the operation and maintenance of the new motor car and to bring it to its new home in western Nevada. [60] It arrived in Carson City on May 9, 1910[61] and entered into regular service between Carson City and Minden on June 6.[62](

The V&T continued to post modest profits through the 1910s and into the early 1920s. By the mid-1920s, however, improvements in roads and motor transportation began to eat into both the freight and passenger revenue from the line. As a result, the V&T posted a loss in 1924.[63] The McKeen car continued in regular service as the fortunes of the V&T dwindled through the 1920s and 1930s. Declining revenues were only accelerated by the onset of the Great Depression in 1929. In that year, passenger operations on the V&T were scaled back and the McKeen car was taken out of regular service.

For the next two years, the McKeen car was used only for specials and extras while the V&T management worked to win governmental approval to convert the car for use as a Railway Post Office and Railway Express handler. Intervention by Postmaster General Walter Folger Brown at the behest of Odgen Livingston Mills, Secretary of the Treasury and son of the late V&T President D.O. Mills, resulted in Post Office approval for conversion of the car in the spring of 1932. The smoking compartment was modified for use as a Railway Post Office. A new partition was placed in the main compartment. The rear of the car had two new freight doors added and was used for Railway Express freight operation. The center of the car retained seating for 24 passengers. The McKeen car operated fairly consistently in this configuration for an additional thirteen years.[64]

V&T operations during the 1930s continued to lose money. With the death of O. L. Mills in 1937, V&T management could no longer avoid the continued losses. The company entered receivership in 1938 and it was quickly announced that the Virginia City-to-Carson City portion of the line would be abandoned.[65] World War II brought a reprieve for the what remained of the V&T as restrictions on gasoline and rubber use increased demand for both freight and passenger service. Following the war, the V&T once again was faced with severe losses and lack of demand for services. In addition, V&T equipment had again aged to the point where maintenance and repair costs greatly increased operating expenses.[66] Following the end of the war, management decided that it was time to retire their McKeen Car after 35 years of service. Her last revenue run was on October 31, 1945—Nevada Admission Day. In her time with the V&T, the McKeen car had traveled more than a half a million miles on her original engine and served many thousands of passengers, a truly remarkable record.[67]

In 1946, the V&T removed the engine and trucks from the McKeen and sold the car-body for use as a Carson City restaurant. Known variously as Denny's Diner, the V&T Diner and the Super Chief Diner, the car-body occupied several locations. In 1955, it was moved to 1400 South Carson Street where it remained until 1995. From 1962 until 1995, the McKeen car was owned by Al's Plumbing and was used as storage and offices for the business. In 1995, Al Bernhard and his family generously donated the McKeen car to the NSRM.[68] The car body was moved to the museum in 1996 where it was meticulously restored.

[60] Ibid., 24.
[61] Ibid., 25.
[62] Ibid., 29.
[63] Dangberg, *Carson Valley: Historical Sketches of Nevada's First Settlement*, 120.
[64] Drew, *Virginia & Truckee Railway McKeen Motor Car #22 Restoration Feasibility Study*, 57.
[65] Wyatt, *Virginia & Truckee 4-6-0 Locomotive #27 Restoration Feasibility Study*, 1:4.
[66] Beebe, *Steamcars of the Comstock*, 21.
[67] Drew, *Virginia & Truckee Railway McKeen Motor Car #22 Restoration Feasibility Study*, 61-62.
[68] Ibid., 70-72.

Comparative Context Analysis:

As part of the rehabilitation study for the McKeen car, the NSRM compiled a list of all McKeen manufactured equipment still in existence. Only four surviving McKeen motor cars were identified. None of these surviving McKeen cars display the current state of high integrity and preservation of the NSRM's McKeen car. Among these four surviving examples, the NSRM's McKeen car is one of only two 70-foot examples remaining. The other was rebuilt with significant modifications to the car-body and made into a diesel electric switcher. Two other motor car bodies (50-foot and 58-foot) also exist but are not part of NSRM's inventory. Each has been radically modified, one converted to a passenger car and one cut in half and used for a storage shed.[69] The 50-foot car body is in private ownership in Anchorage, Alaska and the two pieces of the 58-foot car-body were in private ownership in Price, Utah.[70] Of the four, the V&T McKeen car clearly has the most physical integrity. In all other cases the car-body had been significantly altered and in all cases the power plant had been removed.[71]

The restored McKeen car also possesses the high integrity required to convey its significance. It is true that the original McKeen engine, trucks, and furnishings were discarded in 1946, but fortunately, both specifications and photographs for the motor-car exist. The NSRM has carefully executed its restoration plan in order to preserve all remaining historic material that is salvageable. All new materials have been fabricated to replicate original components with the exception of the new engine, its compatible transmission and controls. These per force must be new in order to meet combined operational and safety requirements. They are contained in the engine compartment, the least publicly accessible space in the car. The ability of the McKeen car to once again carry passengers is critical to the ability of the public to experience the historic character and significance of this essentially unique survivor of America's railroad history.

The McKeen Motor Car Company was based in Omaha, Nebraska within a Union Pacific Railroad complex of manufacturing buildings. None of the McKeen Motor Car Company warehouses, manufacturing plants or offices still exist and the McKeen car is the best surviving representative of the innovations and advancements in rail technology made by McKeen and his company.

William Riley McKeen, Jr.'s greatest innovations with respect to his designs for self-propelled railcars came from his use and adaption of new structural and mechanical technologies and a growing understanding of the issue of air/wind resistance. The innovation of moving from 19th Century steam technology to the use of what appeared at the time as a more cost efficient gasoline-fueled internal-combustion engine was particularly important. According to Chris DeWitt, Restoration Supervisor at the NSRM, from a technological standpoint, McKeen-produced engines evolved fairly rapidly, as did internal-combustion engines in general, before the First World War. However, McKeen engines still proved less successful than anticipated in actual operation, and most were replaced within a few years of a given car's initial delivery.

Today, no McKeen-produced engine is known to exist. By the time the McKeen car's original engine was discarded around 1946, the McKeen Motor Car Company had already been out of business for 20-years. Even by 1945, original McKeen engines as well replacement parts had become scarce or impossible to find.[72] Yet,

[69] Ibid., 122.
[70] Ibid., 122.
[71] Ibid.
[72] Chris Dewitt, e-mail message to author, August 1, 2011.

despite its lack of an original engine and transmission, the fact that the McKeen car is now fully operable plays a central role in providing the visiting public with a more effective understanding, interpretation, and appreciation for this nationally unique historic resource.

9. MAJOR BIBLIOGRAPHICAL REFERENCES

Beebe, Lucius and Charles Clegg. S*teamcars to the Comstock.* Berkeley: Howell-North Books, 1957.

————. *Virginia & Truckee.* Oakland: Grahame H. Hardy, 1949.

Berlin-Zossen Railroad. *The Berlin-Zossen Electric Railway Tests of 1903: A report on the test runs made on the Berlin-Zossen Railroad in the months of September to November 1903*. Translated by Franz Welz, E. E. New York: McGraw, 1905.

Dangberg, Grace. *Carson Valley: Historical Sketches of Nevada's First Settlement.* Minden, NV: Carson Valley Historical Society, 1972.

Drew, Stephen E. *Virginia & Truckee Railway McKeen Motor Car #22 Restoration Feasibility Study*. Carson City: Nevada State Railroad Museum, 1997.

Drury, George H. *Guide to North American Steam Locomotives.* Waukesha, WI: Kamlbach Books, 1993.

Elliot, Russell R. *History of Nevada.* Lincoln: University of Nebraska Press, 1973.

Ferrell, Mallory Hope. *Virginia & Truckee: The Bonanza Road.* Mukilteo, WA: Hundeman Publishing, 1999.

James, Ronald M. *The Roar and the Silence: A History of Virginia City and the Comstock Lode.* Reno: University of Nevada Press, 1998.

Klein, Maury. *The Life and Legend of E. H. Harriman.* Chapel Hill, NC: University of North Carolina Press, 2000.

Mencken, August. *The Railroad Passenger Car.* Baltimore: Johns Hopkins University Press, 1957.

Myrick, David F. *Railroads of Nevada and Eastern California,* Vol. 1. Berkeley: Howell-North Books, 1962.

Solomon, Brian. *American Steam Locomotive.* Osceola, WI: MBI Publishing, 1998.

White, James H., Jr. *The American Railroad Passenger Car*. Baltimore: Johns Hopkins University Press, 1978.

Wyatt, Kyle K. *Virginia & Truckee 4-6-0 Locomotive #27 Restoration Feasibility Study.* Carson City: Nevada State Railroad Museum, 1997.

Zeitler, Raymond S. S*elf-Contained Railway Motor Cars and Locomotive.* Chicago: American School, 1921.

Previous documentation on file (NPS):

__ Preliminary Determination of Individual Listing (36 CFR 67) has been requested.
_X_ Previously Listed in the National Register.
__ Previously Determined Eligible by the National Register.
__ Designated a National Historic Landmark.
__ Recorded by Historic American Buildings Survey: #

__ Recorded by Historic American Engineering Record: #

Primary Location of Additional Data:

__ State Historic Preservation Office
__ Other State Agency
__ Federal Agency
__ Local Government
__ University
_X_ Other (Specify Repository): Nevada State Railway Museum

10. GEOGRAPHICAL DATA

Acreage of Property: less than one acre

UTM References:	**Zone**	**Easting**	**Northing**
	11	260830	4336700

Verbal Boundary Description:

The boundary for the McKeen Motor Car #70 is limited to the motor car itself. The McKeen car is presently located on the grounds of the Nevada State Railroad Museum, 2180 S. Carson Street, Carson City, Nevada.

Boundary Justification:

The boundary of the McKeen Car #70 is the external dimensions of the motor car as it is presently located on the museum grounds as described above. The Nevada State Railroad Museum, which includes historic rails, trackbeds, a former Nevada railroad station building, and other rail-related structures serves as a highly appropriate setting for McKeen Car # 70.

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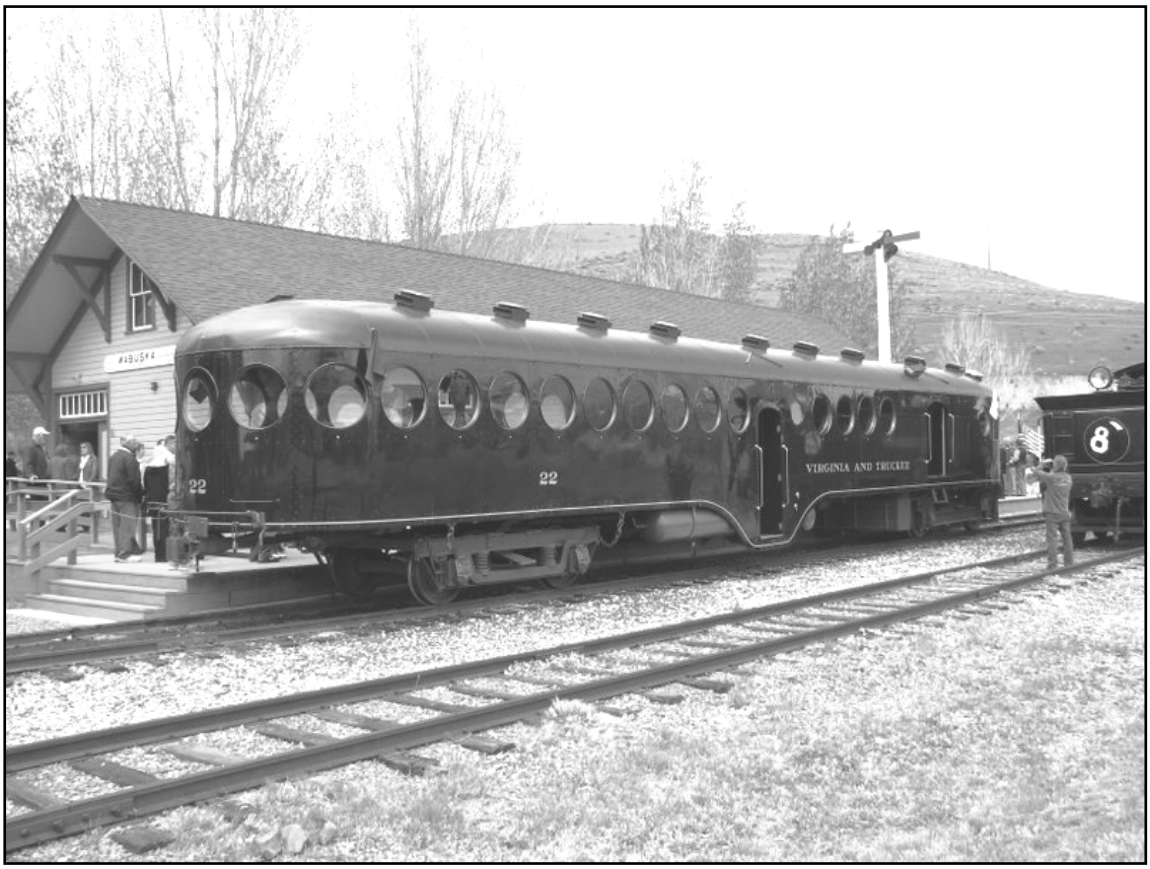
NATIONAL HISTORIC LANDMARKS PROGRAM
September 1, 2011

Photograph 1. McKeen Motor Car# 70 (front quarter view).



Photograph 2. McKeen Motorcar #70 (rear quarter view).

Photograph 3. McKeen Motor Car #70 (on Nevada State Railroad Museum Railroad turntable).

Photograph 4. McKeen Motor Car #70 (full front view).

Photograph 5. McKeen Motor Car #70 (full rear view).

Photograph 6. McKeen Motor Car #70 (typical view, wheel truck).

Photograph 7. McKeen Motor Car #70 (Inscribed interior manufacturers's label)

Photograph 8. McKeen Motor Car #70 (Rear seat area, rear main passenger cabin).

Photograph 9. McKeen Motor Car #70 (view back to front, from rear of main rear passenger cabin).

Photograph 10. McKeen Motor Car #70 (view toward front from middle of main rear passenger cabin).

Photograph 11. McKeen Motor Car #70 (view back to front, front passenger cabin).

Photograph 12. McKeen Motor Car #70 (view front to back from front of baggage compartment).

Photograph 13. McKeen Motor Car #70 (view toward front engine/control room from doorway between front passenger cabin and baggage compartment.

Photograph 14. McKeen Motor car #70 (view from rear to front of engine/control room, front of car).

Photograph 15. McKeen Motor car #70 (expanded view of engine/control room with engine in the foreground and control panel podium in background on right).

Photograph 17. McKeen Motor Car #70 rounding a track bend.

Photograph 18. McKeen Motor Car #70 leaving NSRM station area.

Western Nevada Community College

ROAD

Substa

Sandpit

4750

GLENN DR

STREET

NORTH

4719

4720

4730

WINNIE LANE

4800

4WD

7

BATH ST

Park

4837

ASH CANYON RD

4781

MOUNTAIN

CARSON CITY

4709 LONG ST

PETERS ST

8

Lone Mountain

4817

4680

9

VALLEY

BM 4818

Lone Mtn Cemetery

4340

BM 4650

50

Park

4339

WASHINGTON ST

4711

Park

BM 4756

Canyon Creek

Creek

4730

ROBINSON ST

BM 4687

ROOP ST

AVE

4651

TELEGRAPH ST

4800

18

Athletic Field

MUSSER ST

17

4798

KING ST

4720

ROAD

BM 4665

HARBIN

4643

4914

4696

5TH ST

MARY

MINNESOTA

Childrens Home

4650

4338

5000

5200

ELM ST

9TH ST

Landmark Letter

5756

C Hill

5600

Shopping Center

4654

Rest Area

STEWART ST

OREGON

Governors Field

4640

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5534

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FAIRVIEW DR

Nevada Railroad Museum

BD

CURRY

FOREST

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EAGLE

4336

NATIONAL

BM 4702

DRIVE

Park

CARSON INDIAN COLONY

Water Tanks

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SILVER

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R 20 E

Voltaire Canyon

5200

Sandpits

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Mobile Home Park

Park

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McKeen Motor
Car #70
Carson City, NV
Zone 11
E 260830
N4336700